WHAT IS CLAIMED IS:

A deformable optical system, comprising:
 a reflection device having a first reflecting surface and a second surface;

an integrated circuit actuator having moveable extensions extending from a support surface and coupled to the second reflective surface; electrodes individually coupled to corresponding ones of the extensions; and

a controller coupled to the electrodes configured to control the extensions via the electrodes.

- 2. The deformable optical system of claim 1, wherein the reflection device is a mirror.
- 3. The deformable optical system of claim 1, wherein:
 the integrated circuit actuator is a piezoelectric device;
 the support device is a piezoelectric chuck; and
 the extensions are piezoelectric pins fabricated on the piezoelectric chuck.
- 4. The deformable optical system of claim 1, further comprising:
 a conductive coating on a surface of the support device having the extensions; and
 a conductive coating on the electrodes.
- 5. The deformable optical system of claim 1, further comprising:
 a measuring system that measures a wavefront aberration,
 wherein the controller controls the extensions based on the measured
 wavefront aberration.

- 6. The deformable optical system of claim 5, wherein a number of the extensions used corrects higher order portions of the measured wavefront aberration.
- 7. The deformable optical system of claim 5, wherein a number of the extensions used corrects for all orders of the measured wavefront aberration.
- 8. The deformable optical system of claim 1, further comprising:
 a measuring device configured to determine the wavefront aberration.
- 9. The deformable optical system of claim 8, wherein a number of the extensions used corrects at least one of Zernike polynomial terms and other representations of the wavefront error.
- 10. The deformable optical system of claim 1, wherein the control system measures a change in capacitance of the extensions to determine characteristics of movement of the extensions.
- 11. The deformable optical system of claim 10, wherein the characteristic of movement of the extensions corresponds to a characteristic of movement of the first reflecting surface.
- 12. The deformable optical system of claim 1, wherein the reflection device is substantially planar.
- 13. The deformable optical system of claim 1, wherein the reflection device is curved.

- 14. The deformable optical system of claim 1, wherein a height of the extensions correlates to an amount of decoupling of the extensions from each other.
- 15. The deformable optical system of claim 1, wherein the extensions are from less than 1 micron to more than 1 millimeter in width or diameter.
- 16. A deformable optical device, comprising:
 a reflection device having a first reflecting surface and a second surface;

an integrated circuit actuator having a support device and moveable extensions extending therefrom, which are coupled to the second surface; and

electrodes coupled to corresponding ones of the extensions.

- 17. The deformable optical device of claim 16, wherein the reflection device is a mirror.
- 18. The deformable optical device of claim 16, wherein:
 the integrated actuator is a piezoelectric device;
 the support device is a piezoelectric chuck; and
 the extensions are piezoelectric pins fabricated on the
 piezoelectric chuck.
- 19. The deformable optical device of claim 16, further comprising:
 a conductive coating on a surface of the support device having
 the extensions; and
 a conductive coating on the electrodes.
- 20. The deformable optical device of claim 16, wherein the reflection device is substantially planar.

- 21. The deformable optical device of claim 16, wherein the reflection device is curved.
- 22. The deformable optical system of claim 16, wherein the extensions are from less than 1 micron to more than 1 millimeter in diameter or width.
- 23. A method comprising:

 detecting wavefront aberrations;

 generating a control signal based on the detected aberration;

 moving extensions of a integrated circuit piezoelectric actuator based on the control signal; and

deforming a reflector based on the moving of the extensions to correct the aberrations in the wavefront.

- 24. The method of claim 23, wherein the moving and deforming steps compensate for higher order values of the aberrations.
- 25. The method of claim 23, further comprising generating a Zernike polynomial from the detecting step, wherein the moving and deforming steps correct for aberrations corresponding to all orders of the Zernike polynomial.
- 26. The deformable optical system of claim 1, wherein a number of the extensions is at least up to 1 million per square millimeter.

27. The deformable optical system of claim 1, wherein:
the integrated circuit actuator is a piezoelectric device;
the support device is a piezoelectric chuck; and
the extensions are at least one of piezoelectric pins, strips, and
concentric rings fabricated on the piezoelectric chuck.